

**REMARKS**

Claims 1-33 have been pending in this application, of which Claims 1-26 have been previously withdrawn. Claims 27-33 have been rejected. These rejections are respectfully traversed and reconsideration is requested. New Claims 34-36 have been added. The new claims depend on pending independent Claim 27. No new matter has been added.

**Claim Rejections Under 35 U.S.C. § 103**

Claims 27, 31 and 32 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over James (US Patent Application Publication No. US 2002/0066770) in view of Rogel (US Patent No. 3,718,855). This rejection is respectfully traversed and reconsideration is requested.

This application is directed toward health control actions that may be performed on a material in order to extend the service life of a component or an article. The health control actions may involve examining the article to determine if early stage damage is present and to establish a baseline condition for comparison with future measurements. The damage may be in the form of a crack, a pit, or some other material change, such as coating degradation or residual stress redistribution. The damage may be observed through variations in absolute electrical property values, such as an electrical conductivity or magnetic permeability. If damage is detected, then a process, such as grinding or blending, can be performed to remove the damage and other processes, such as shot peening or recoating, can be performed to return the material to essentially its original state or condition. Measurements performed subsequent to these processes that alter the material condition ensure the quality of the process and also provide a reliable baseline for comparison to future condition assessments. These health control actions permit recapitalization for the article, can be performed repeatedly over the service life of the component, and are a part of the damage tolerance framework for reliable operation with the article. This framework allows, for example, the rescheduling of inspections or maintenance operations based on the article condition.

James addresses repair of engine components using a cold spray process. The process requires identifying a discontinuity, such as a crack, notch, or pit, and performing a repair action, such as cold spray depositing another material onto the surface, excavating the discontinuity, or attaching a replacement material to the surface. James does not teach or suggest inspecting after

the repair action is completed, since the discontinuity is removed, or of using an absolute electrical property for the material condition assessment. Nor does it teach that this repair action is a part of a framework for maintaining reliable operation of the component throughout the service life of the component as part of a damage tolerance framework.

Rogel teaches an eddy current-based system for flaw detection in holes. The system includes a rotating probe that scans the internal surface of the hole in prescribed increments and records each complete probe rotation. It also incorporates a notched reference standard as part of the probe housing which is aimed at improving measurement repeatability for comparison with future measurements. However, this comparison is relative to the signal from the notch and requires the same type of notch (e.g., notch size) for future comparisons. Rogel does not teach or suggest that the baseline information can be absolute electrical property values. Furthermore, neither Rogel alone, nor the combination of James and Rogel teach or suggest that the inspection can be performed after a health control repair action or as part of a framework for reliable operation over the service life of the component. Therefore, Claims 27, 31 and 32 are not rendered obvious by the combination of James and Rogel, and the rejection should be withdrawn.

Staver (U.S. Patent No. 6,670,577) does not supplement the failing of James and Rogel to teach using absolute electrical property values baseline information, and, therefore, Claim 33 is not obvious in view of the combination of James, Rogel and Staver.

Claims 27-30 and 32-33 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Floret (U.S. Patent No. 5,406,500) in view of Staver. This rejection is respectfully traversed and reconsideration is requested.

Floret discusses an automated device for nondestructive testing and inspection of structures. The device uses a probe, such as an eddy current probe, to scan over the material surface to inspect for cracks. Floret does not teach or suggest using absolute electrical property values for creating the baseline property information. Even though shot or shock peening, for example, as described in Staver, is commonly used as a health control action to create compressive residual stresses at a material surface, the combination of Floret and Staver does not teach inspecting after the repair action is completed or that this repair action is a part of a framework for maintaining reliable operation of the component throughout the service life of the

component as part of a damage tolerance framework. Therefore, Claims 27-30 and 32-33 are not obvious in view of the combination of Floret and Staver. All claims are now believed to be in condition for allowance.

### CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By Lyubashev

Lyudmila Lubashev

Registration No. 55,408

Telephone: (978) 341-0036

Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: 7/25/2005